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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,038	04/02/2004	Isaac Farr	200316298-1	2249

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EXAMINER

BERMAN, SUSAN W

ART UNIT	PAPER NUMBER
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1796

NOTIFICATION DATE	DELIVERY MODE
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03/03/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/817,038	Applicant(s) FARR ET AL.	
	Examiner /Susan W. Berman/	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment/Arguments

Applicant's Attorney has filed a statement concerning common ownership pursuant to 35 USC § 103 (c) on 12-10-2007 that removes US Patent 6,742,456 to Kasperchik et al as a reference cited under USC § 103 (a). Thus the rejections of record of claims over US 6,742,456 are withdrawn.

Applicant's arguments filed 12-10-2007 have been fully considered but they are not persuasive with respect to the rejection under 35 USC § 112, second paragraph.

New grounds of rejection are set forth herein below over newly found prior art.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites that a polymerization reaction occurs between the monoacrylate component and free radicals formed by the light sensitive initiator. However, what is disclosed in the specification and known in the art is that the light sensitive initiator is activated by exposure to light to cause the monoacrylate to form free radicals and that the monoacrylates polymerize to form a polymer, not that polymerization is between free radicals formed from the initiator and the monoacrylate. No polymerizable photoinitiators are disclosed in the instant specification. See page 7, line 31, to page 8, line 4, and page 12, line 11, to page 12, line 10. Applicant discloses that the mechanism includes an interaction of the initiator with light to form a radical initiator,

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not a polymerization of free radicals from the initiator with the monoacrylate compound. It is the acrylate monomers that polymerize to form an acrylic polymer when the polymerization is initiated by exposure of the initiator to light. Free radicals formed from the initiators are not part of the product. The free radical formed from the initiator is capable of initiating a polymerization reaction- it does not polymerize.

Claim 1 recites “monoacrylate component”. However, what is described in the specification is a monomeric acrylate component. See pages 11-12. Applicant teaches di-, tri- and tetra-functional acrylates in addition to monoacrylates. Does applicant intend to limit the claims to monoacrylates, i.e. monomers containing only one acrylate functional group?

Dependent claims 4, 5 and 6, taken with claim 1 are confusing for the following reasons. Claim 1 recites that the polar binder comprises a viscosity modifier and a surface tension modifier, and that a monoacrylate component is a separate component from the polar binder and that a light sensitive initiator is a separate component from the polar binder. Claim 4 recites that the polar binder comprises a polar solvent, a monoacrylate component, the surface tension modifier, the viscosity modifier and the light sensitive initiator. Claim 5 adds the acidic component to the polar binder and claim 6 adds a second acidic component to the polar binder. It is not clear whether the components in the polar binders recited in claims 4, 5 and 6 are the same or different from the acidic component, the monoacrylate component and the light sensitive initiator recited in claim 1 wherein the polar binder comprises a viscosity modifier and a surface tension modifier. Does applicant intend to set forth, in claims 4, 5 and 6 that some of the claim 1 components are packaged separately? If so, it should be clearly set forth.

Claim Rejections - 35 USC § 102/35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8, 10 and 11 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Napadensky (6,569,373). Napadensky discloses compositions for building 3-D models using ink jet technology. Acrylic components corresponding to those disclosed by applicant are taught from column 9, line 51, to column 10, line 33. Photoinitiators corresponding to those disclosed by applicant are taught from column 11, line 33, to column 12, line 8. Surface active agents, stabilizers and pigments, such as metal oxides, are taught in column 12 and Table 2. A dispersant polymer having acidic groups, “Disperbyk 110”, is taught in column 12 and in Table 2. Examples 16-18 in Table 3 disclose compositions comprising a titanium dioxide corresponding to a metal oxide “basic component” in the instant claims and “Disperbky 110”, corresponding to an “acidic component” in the instant

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claims. At least formulations 14 and 15 in Table 3 combined with formulations 16-18 in Table 4 include a polar binder such as vinyl caprolactam or vinylpyrrolidone. Napadensky does not mention whether the polar binder is capable of stimulating a crosslinking reaction between the basic component and the acidic component. However, since Napadensky teaches a viscosity modifier and a surface tension modifier, the disclosed components would be expected to have the same properties as set forth in the claim in the absence of evidence to the contrary.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 101 58 233 A1 in view of Napadensky '373.

DE '233 discloses a reactive system for 3D printing comprising a polyacid and a polybase or an inorganic reactive component such as a metal oxide to which a "special reactive system" can be added. The special reactive system comprises radically polymerizable components, such as (meth)acrylates. The (meth)acrylates taught include those disclosed by applicant in paragraphs [0088] to [0092]. See paragraphs [0026] to [0032], [0046] and [0084] to [0100] in DE '233. The difference from the instantly claimed compositions is that DE '233 teaches using a redox catalyst including an alkyl ammonium persulfate or benzoyl peroxide oxidizing agent to initiate polymerization of the radically polymerizable compositions (paragraph [0094]). DE '233 does not mention using a light sensitive initiator.

The disclosure of Napadensky is discussed above. Napadensky teaches an acrylate-functional reactive system for building 3-D models that can be initiated by light sensitive photoinitiators corresponding to those disclosed by applicant (columns 11-12).

It would have been obvious to one skilled in the art at the time of the invention to substitute a photoinitiator, as taught by Napadensky, for the redox initiator in the analogous acrylate-functional reactive systems for building 3-D objects taught by DE '233. DE '233 teaches that the redox system generates free radicals for initiating polymerization of the ethylenically unsaturated component. DE '223 provides motivation to substitute a photoinitiator for a redox catalyst by teaching that the reducing agents and oxidizing agents must not be located together with the ethylenically unsaturated components. Napadensky teaches that the disclosed photoinitiators produce free radicals upon exposure to ultraviolet or visible radiation to initiate a

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polymerization reaction. One skilled in the art at the time of the invention would have been motivated by a reasonable expectation of initiating polymerization of the compositions disclosed by DE '233 by exposure to light in the presence of a photoinitiator, as taught by Napadensky in analogous compositions for building 3-D objects. Further motivation is provided by an expectation of successfully providing the photoinitiator in the building composition since it is not activated until exposed to light, thus providing an advantage over the redox catalyst taught by DE '233.

Conclusion

The following references are cited as art of interest.

Mejiritski et al (6,586,494) disclose radiation curable ink jet ink compositions for forming 3-D models. The compositions comprise an oligomer, a photoinitiator and a diluent to lower viscosity (column 2, lines 37-64, and column 4, lines 12-67). Surfactants and wetting agents are taught as additives (column 6, lines 4-10).

Levy (6,863,859) discloses building compositions comprising a temperature sensitive polymer, acrylate monomers, a surface active agent, an acrylate oligomer having a hydrophilic substituent such as amino or acid, photoinitiator and additives (column 7, line 38, to column 12, line 3). See Tables 1 and 2 for examples of the disclosed compositions. Levy also discloses modeling compositions comprising acrylate monomers, a surface active agent, photoinitiator, stabilizer and additives, such as a pigment and dispersant (column 13, line 29, to column 16, line 38). A dispersant polymer having acidic groups, "Disperbyk 110", is taught in column 16 and in Table 4. See Tables 4 and 5 for components of the disclosed compositions. Examples 16-18 in

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Table 6 disclose compositions comprising a titanium dioxide corresponding to a metal oxide “basic component” in the instant claims and “Disperbky 110”, corresponding to an “acidic component” in the instant claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /Susan W. Berman/ whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SB
2/22/2008

/Susan W Berman/
Primary Examiner
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